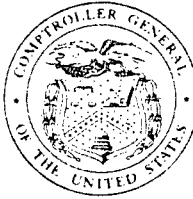


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**DECISION**



**THE COMPTROLLER GENERAL  
OF THE UNITED STATES**  
WASHINGTON, D.C. 20548

FILE: B-198911

DATE: March 27, 1981

MATTER OF: Amdahl Corporation

**DIGEST:**

1. Sole-source acquisition of interim upgrade computer is unjustified where compatibility requirements relied on for sole-source are in excess of minimum needs.
2. Aversion to multiple vendor computer facility is not a sound basis for sole-source award of interim computer upgrade where aversion reflects desire for administrative convenience rather than technical objection.
3. Urgency basis for sole-source award of interim computer upgrade lacks sound basis where agency failed to assess minimum needs or contact potential suppliers of compatible equipment and had adequate time to conduct expedited competitive procurement.

Amdahl Corporation [protests a sole-source acquisition] by the National Institute of Health (NIH) of an International Business Machines (IBM) computer. On the record before us, we find the protest to have merit.

The record shows that at least as early as November 1979 NIH identified a requirement for

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the interim upgrade of its IBM-based computer system pending its replacement. (The total system replacement is a separate procurement which is the subject of another protest, Amdahl Corporation, B-198911.2, also decided today.) NIH filled this interim requirement in June 1980 through the sole-source lease from IBM of an IBM model 3033 MP (Multi-Processor) to replace one of the two coupled IBM model 370/168 MP's in NIH's existing system. Because the new equipment was to be integrated into an on-going system, NIH's minimum requirement was for strict hardware and software compatibility. NIH concluded that the IBM model 3033 MP was the only machine which could both meet the compatibility requirements and be delivered in time.

Amdahl is one of several manufacturers of "plug-compatible" computers whose products are intended to replace or augment IBM systems with little or no change in either software or operating procedures and with little or no technical risk. Our review of the literature leads us to conclude that the data processing industry accepts these processors as fully IBM hardware and software compatible.

Amdahl contends that it could have provided a fully compatible computer within NIH's required delivery period at a substantially lower cost. NIH challenges the compatibility of Amdahl's computers; specifically, NIH asserts that since Amdahl did not build multiprocessors at the time of the sole-source award to IBM, Amdahl was not eligible to participate in the interim procurement. NIH also suggests that the sole-source award to IBM was justified by the necessity to avoid the difficulties of problem identification and solution in a multivendor facility. We find NIH's noncompetitive acquisition of the 3033 MP to be unjustified.

We have recognized that noncompetitive awards may be made where only one firm can reasonably be expected to satisfy the Government's minimum needs within the required time and without undue technical risk. Fermont Division, Dynamics Corporation of America, B-198197, September 9, 1980, 80-2 CPD 184; Ampex Corporation, B-191132, June 16, 1978, 78-1 CPD 439; Hughes Aircraft Company, 53 Comp. Gen. 670 (1974), 74-1 CPD 137. The standard by which we measure the propriety of a sole-source procurement is reasonableness. Science Applications, Inc., B-197099, May 20, 1980, 80-1 CPD 348; Bingham Ltd., B-189306, October 4, 1977, 77-2 CPD 263. This presumes, however, that the sole-source justification is based on the Government's minimum needs; we have not hesitated to question justifications based on excessive requirements. See, e.g., Jarrell-Ash Division of the Fisher Scientific Company, B-185582, January 12, 1977, 77-1 CPD 19; Precision Dynamics Corporation, 54 Comp. Gen. 1114 (1975), 75-1 CPD 402. This acquisition falls into the latter category of cases.

We do not question NIH's requirement for hardware and software compatibility. We agree with Amdahl, however, that NIH's requirement for a multiprocessor was in excess of its minimum needs. Both the replaced IBM 370/168 MP and NIH's new 3033 MP are what is known as "tightly-coupled" multiprocessors, that is, two central processing units (CPU's) tied to a shared memory forming a single multiple-CPU computer. (The alternative is "loosely-coupled" multiprocessing which is the linking of two independent computers, each with its own CPU, memory and operating system, to a common job queue.) The figures on the next page illustrate these two concepts.



There are several advantages to the tightly coupled system configuration attributable to the use of a single operating system resident in the shared memory to control both CPU's. (The operating system is, oversimplified, the software in a computer which controls the physical devices and allocation of resources needed to run users' programs.) For instance, the use of a single operating system to control both CPU's saves (or makes available to users) the substantial memory which normally would be occupied by the second operating system needed to run the second CPU in a nontightly coupled configuration. And, as stated by IBM:

"\* \* \* The chief advantages of multiprocessing are that the resources of the computing complex such as the CPU channels, memory modules, and attached peripheral devices are brought together under the control of a single operating system. In the event of a failure of one of the components, the system will reconfigure itself utilizing the remaining components. \* \* \*

"Another recognized advantage of MP is the availability of the multiprocessing system to distribute workloads more evenly over the two processing units on an instant-by-instant basis. \* \* \* A multiprocessor under the control of a single operating system can manage on a continuous basis both of the CPU's to ensure that each is fully utilized." (Emphasis added.)

NIH, however, described its existing system as follows:

"The heart of the system is two 168-3 MP's and a 145. They are

organized as five subsystems each  
subsystem containing a processor \* \* \*.

\* \* \* \* \*

"Each subsystem has its own resident  
operating system that controls it."

Given NIH's admitted use of multiple operating systems in its MP's, we must conclude that whatever the benefits of MP's, NIH has rejected them by effectively loosening the coupling on its machines. Consequently, we do not believe that NIH's requirement for a tightly coupled MP was justified. While Amdahl may not have built MP's at the time of the sole-source award, that does not mean that it would have been incapable of furnishing a loosely coupled multiprocessing system, which is apparently all that NIH required.

NIH also suggested other reasons why Amdahl's equipment might not have been compatible with its system, none of which we find persuasive. NIH, for example, argued that the IBM 3033 MP provided more "unit control words" (UCW--an identifying code assigned to each input/output device) than did Amdahl's equipment. We share Amdahl's view, however, that this is not a relevant consideration when considering compatibility with NIH's system because Amdahl's computers also provide substantially more UCW's than NIH requires. In sum, we find no reasoned basis on the record before us for NIH's assertion that Amdahl's equipment would be incompatible with its system.

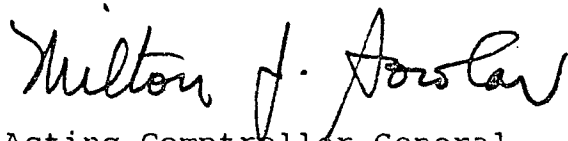
Furthermore, we do not consider NIH's aversion to a multiple vendor facility to be a persuasive basis for precluding all potential suppliers other than IBM from having an opportunity to provide this computer. If we accept the compatibility of Amdahl's equipment, and NIH has provided no reason why this should not be the case, then we must characterize NIH's objection as a reluctance to accept whatever marginal effect a second vendor might have on problem solving rather than a technical objection. We do not regard administrative convenience as a sound basis

for a sole-source award. Techniarts, B-193263, April 9, 1979, 79-1 CPD 246; Kent Watkins & Associates, Inc., B-191078, May 17, 1978, 78-1 CPD 377.

NIH has also suggested that the urgency of the requirement justified the sole-source award to IBM, a position we regard as questionable, at best. The record shows that NIH was able to contact IBM concerning acquisition of the 3033 MP at least as early as December 11, 1979, more than 6 months prior to award. Unlike NIH, we think that the intervening 6 months afforded sufficient time to conduct an expedited competitive procurement, on an "or-equal" basis if no other, for what was essentially the compatible upgrade of only one component in its system. In this regard, we note particularly that many of the specifications and system descriptions which might have been required for such a procurement already existed in the request for proposals for the on-going total system replacement. On the record before us, we must conclude that NIH has not justified its failure to assess its minimum needs and contact the plug-compatible manufacturers concerning the availability of compatible upgrades for the IBM 370/168 MP. In these circumstances, we cannot regard NIH's claim of urgency to be adequate justification for the sole-source award of this contract. Las Vegas Communications, Inc., B-195966, July 22, 1980, 80-2 CPD 57.

Amdahl's protest is sustained.

The question of the remedy to be provided Amdahl is complicated by the fact that this is an interim upgrade with an indefinite systems life. Given the advanced stage of the full procurement, we do not think that meaningful relief is either practical or in the best interests of the Government. Consequently, although we are sustaining Amdahl's protest, we will not recommend any remedial action.



Acting Comptroller General  
of the United States